



D0 SAM – status and needs

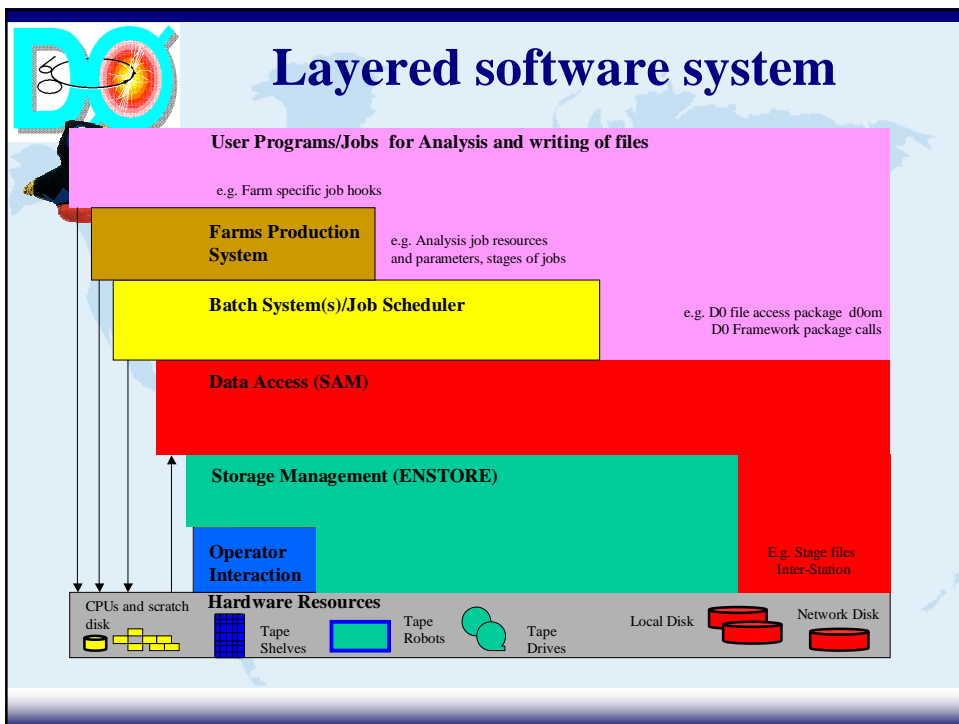
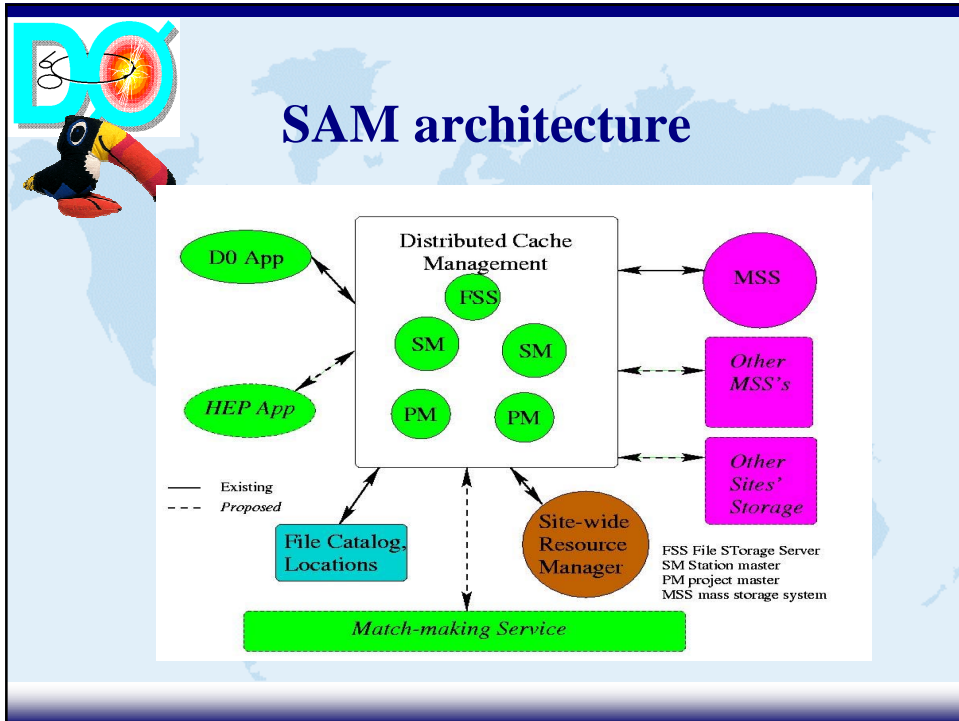
Plagarized from:

D0 Experiment
SAM Project
Fermilab Computing Division



D0 Applications that use SAM to date:

- / Archiving of data from the Online System - including test data from the parts of the silicon detector
- / Storage of Monte Carlo Datasets from multiple production sites
- / Retrieval of Monte Carlo data for algorithm testing and development
- / Cycling through the data for testing of “production farms”





Current D0 Data

- / >5 TB in the Enstore Robot
- / Suppliers of Monte Carlo Data:
 - FNAL - 414,100 events
 - IN2P3, Lyon - 227,000 events
 - Univ of Texas Arlington - 195,000 events
 - Prague - 115,800 events
 - NIKHEF (Amsterdam) - 89,800 events
- > 1 million events in SAM Catalog



Scale of Use - til Beam

- / Central Analysis Server Registered users:
 - / now: 145
 - / in 6 months: ~400
- / SAM active station managers:
 - / now: ~6 (including one in Lyon)
 - / in 6 months: ~24
- / Offsite distribution or reception of data over the network
 - now: ~.5 GB/hr
 - in 3-6 months: ~2-3 GB / hr (average)



Data Delivery Tuning - to Central Analysis System

- / Achieved through careful configuration of SGI Scalable Unit
 - / a gigabit ethernet,
 - / a reserved CPU on the SGI,
- / Scalable unit serves 34.5 MBytes/sec
- / Unit can be replicated many times, providing a linear increase in throughput.
- / In tests the unit was replicated four times, providing 120 MB/sec of staging I/O.



Details..

- / Coalesce ethernet interrupts
 - / Reserve a CPU for the staging application and interrupt service.
 - / Force the Ethernet device's interrupts to be serviced on the reserved CPU
 - / Provide a VLAN with a 30 bit netmask to be dedicated to the ethernet interface
 - / Configure the ethernet interface to use the IP address in the VLAN obtained above.
 - / Configure so that applications can discover and exploit the scalable unit
- / <http://RunIIComputing.fnal.gov/d0integration/ConfigurationProcedures/configuration.html>



Testing

- / Test Harness which simulates all modes of SAM operation -
 - / event and file storage and retrieval,
 - / multiple stations
 - / error conditions - tape errors, node crashes
- / Starting to be used on a regular basis to test the system.
- / Will be used to test overall system throughput and robustness.

SAM Catalog Web Query Interface - Microsoft Internet Explorer

File Edit View Favorites Tools Help

SAM Catalog Web Query Interface

Catalog Browsing


Analyzed Files Summary

FileName	Consumers	FirstConsumed	LastConsumed
sim.pmc02_01.pythia.tbbar_mb1.1ev_200evts.310_1304	3	10-jul-2000 15:28:59	13-jul-2000 14:06:08
sim.pmc02_01.pythia.tbbar_mb1.1ev_200evts.310_1304	3	10-jul-2000 15:50:04	13-jul-2000 21:56:24
sim.pmc02_01.pythia.tbbar_mb1.1ev_200evts.342_1356	3	10-jul-2000 07:28:31	13-jul-2000 15:08:56
sim.pmc02_01.pythia.tbbar_mb1.1ev_200evts.342_1360	3	11-jul-2000 07:22:03	13-jul-2000 15:10:54
sim.pmc02_01.pythia.tbbar_mb1.1ev_200evts.342_1361	3	10-jul-2000 07:14:45	13-jul-2000 22:04:43
	3	10-jul-2000 14:41:43	13-jul-2000 21:08:43
	3	10-jul-2000 22:42:34	13-jul-2000 21:51:01
	3	10-jul-2000 16:01:09	13-jul-2000 15:12:44
	3	10-jul-2000 08:26:29	13-jul-2000 22:55:13
	3	10-jul-2000 23:23:13	13-jul-2000 22:44:20
	3	11-jul-2000 07:28:10	13-jul-2000 18:05:30
	2	11-jul-2000 15:41:20	13-jul-2000 05:50:31

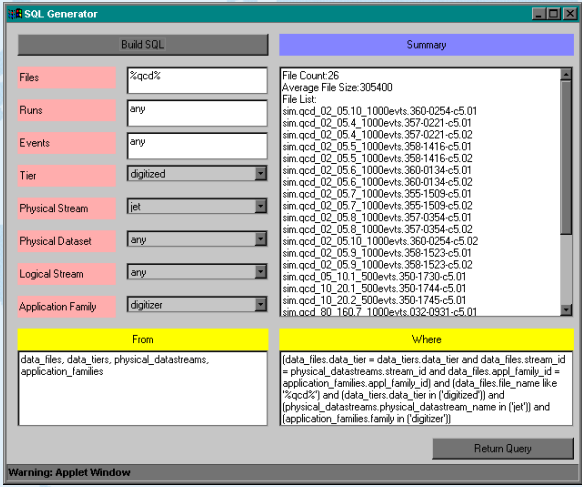
Project Id:
 Project Name:
 File Name:
 Station:
 Consumed Before: (dd-mon-yyyy)Ex06-JUN-1999
 Consumed After: (dd-mon-yyyy)Ex06-JUN-1999
 Sort Order: (dd-mon-yyyy)Ex06-JUN-1999
 Maximum rows of output:
 Fetch Matching Analyzed Files:

Note: Use percent key (%) for a wildcard. Names are case-sensitive.

SAM Catalog Web Query Interface - Microsoft Internet Explorer
 File Edit View Favorites Tools Help



Selecting Files/Datasets



The screenshot shows the 'SQL Generator' application window. It has two main panes: 'Build SQL' on the left and 'Summary' on the right. The 'Build SQL' pane contains several dropdown menus for selecting criteria: Files (set to '%qcd%'), Runs (set to 'any'), Events (set to 'any'), Tier (set to 'digitized'), Physical Stream (set to 'jet'), Physical Dataset (set to 'any'), Logical Stream (set to 'any'), and Application Family (set to 'digitizer'). Below these is a 'From' section with a text box containing 'data_files, data_tiers, physical_datastreams, application_families'. The 'Summary' pane shows 'File Count: 26', 'Average File Size: 305400', and a 'File List' containing 26 file names. At the bottom of the window, there is a 'Return Query' button and a 'Warning: Applet Window' message.



Near Term Needs - grid related:

- / Bulk data transfers to support Monte Carlo Challenges
- / Authentication mechanisms as more Stations are deployed offsite
- / Augment resource management and optimization services
- / Integration with batch system/ job scheduler



Near term needs - nongrid related

- / Test and monitor long term performance under load
- / Increase robustness and fault tolerance
- / Better characterize actual data access patterns and tune catalog and file placement
- / More support for ease of use for Physicists - dataset definition and selection
- / Support for event selection and sub-file delivery